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EXPLANATION TO PLATES.

PLATE III.

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| 1. <i>Spilographa setosa</i> , sp. nov. | 6. <i>Aciura ferruginea</i> , sp. nov. |
| 2. <i>Trypeta straminea</i> , sp. nov. | 7. <i>Aciura nigricornis</i> , sp. nov. |
| 3. <i>Edaspis anthracina</i> , sp. nov. | 8. <i>Acrotænia otopappi</i> , sp. nov. |
| 4. <i>Rhagoletis ribicola</i> DOANE. | 9. <i>Eutreta nora</i> , sp. nov. |
| 5. <i>Rhagoletis caurina</i> , sp. nov. | 10. <i>Eutreta aurantiaca</i> , sp. nov. |

PLATE IV.

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| 1. <i>Eurosta conspurcata</i> , sp. nov. | 7. <i>Tephritis californica</i> , sp. nov. |
| 2. <i>Eurosta aterrima</i> , sp. nov. | 8. <i>Tephritis rufipennis</i> , sp. nov. |
| 3. <i>Neaspilota brunneostigmata</i> , sp. nov. | 9. <i>Euaresta tricolor</i> , sp. nov. |
| 4. <i>Tephritis variabilis</i> , sp. nov. | 10. <i>Urellia pacifica</i> , sp. nov. |
| 5. <i>Tephritis murina</i> , sp. nov. | 11. <i>Urellia aldrichii</i> , sp. nov. |
| 6. <i>Tephritis webbii</i> , sp. nov. | |

THE SMYNTHURIDÆ OF LONG ISLAND, NEW YORK.

BY NATHAN BANKS.

Among the Thysanura the Smynthuridæ are doubtless the most interesting group. Higher developed and more handsomely marked than their fellows they more readily attract attention and study. Their habits are various. Some live on stagnant water, several on living healthy plants, most upon decaying vegetation, many on fungi, some among ants, a few in caves, and others among moss. Like most of the Collembola they are quiet until disturbed, when, by the aid of the powerful spring or furcula, they make a great jump, nearly always followed by several other leaps of less extent. Their structure affords several good points for classification and discrimination of species, most prominent of which are the antennæ and furcula. The two common garden species, *S. arvalis* and *S. hortensis*, are of some economic importance.

The spring-tails with a short body constitute the family Smynthuridæ. Lubbock separated certain forms from them under the name of Papiridæ, but to my mind without just cause. Early in the history of these insects they were arranged by Bourlet in two genera, *Smyn-*

thurus and *Dicyrtoma*. But Bourlet did not see clearly the structure of the antennæ of *Dicyrtoma*, which he stated to be eight jointed. He was misled, doubtless by poor magnifiers, to consider the slight swellings on the second and third joints to represent the terminations of so many joints. Lubbock, unable to see through Bourlet's mistake, erected a new genus, *Papirius*, for precisely similar forms. Since Bourlet's name for these forms has the priority I believe it should be used in spite of his mistake in generic description. Yet to my mind it was a mistake so natural, and so easily explained, that there was no excuse for not accepting Bourlet's name. *Smynthurus* is readily, and I believe naturally, divisible into two groups; one having the fourth joint of the antennæ long and slender, and with at least fifteen annulations; the other group with the last joint of antennæ shorter and with less than ten annulations. The former group comprises the larger forms. The differences which separate these two groups are evidently not of as great value as separate them from *Dicyrtoma*, yet I think it would be well to use at least subgeneric names to designate these groups. Now the type of *Smynthurus* (*S. fuscus*) belongs to the first group, and that name must be retained for these species in case of a division; therefore I propose to give the subgeneric name of *Bourletiella* to the latter group in honor of him who first seriously investigated these interesting forms. *S. hortensis* Fitch shall serve as its type.

The following list of species which the writer has taken at or near Sea Cliff, Long Island, cannot be considered complete, as other groups often attracted more attention. Yet it is larger, doubtless, than can be made of many localities; and will serve, I hope, to induce others interested in these tiny insects to list the species of their own regions.

Our two genera may be separated by the following table:

Antennæ elbowed between third and fourth joints, the fourth joint longer than any of the others, no tubercles on the dorsum of abdomen.....	Smynthurus.
Antennæ elbowed between the second and third joints, the fourth (or apical) joint shorter than the second, which is very long, often a pair of tubercles on dorsum.	Dicyrtoma.

Smynthurus Latr.

- 1—Fourth joint of antennæ long and slender, with at least 15 annulations (*Smynthurus* proper).....2
- Fourth joint of antennæ shorter, with less than ten annulations (*Bourletiella*)...7
- 2—Dentes with spines each side, greenish species.....**spinatus.**
- Dentes without spines each side.....3

- 3—Wholly black (except between eyes) legs jet black. **nigripes.**
 Not wholly black, legs paler 4
 4—Legs pale, with black marks, no silvery marks on sides of abdomen **sylvestris.**
 Legs without dark marks. 5
 5—Some silvery spots on sides of abdomen, legs pale. **argenteornatus.**
 No silvery spots. 6
 6—A pale area above on dorsum, legs pale. **dorsalis.**
 No pale area above, legs brown. **fraternus,**
 7—Body furnished with clavate hairs above. **clavatus.**
 Only simple hairs on body. 8
 8—A horn or spine each side near anal tubercle; pale, marked with black.
macgillivrayi.
 No such horn or spine. 9
 9—Black, with pale between eyes. **hortensis.**
 Not black. 10
 10—White or yellowish, with dark antennæ. **arvalis.**
 Not all pale, marked with dark stripes on dorsum of abdomen. **elegans.**

Smynthurus spinatus *Mac Gill.*

A few specimens taken on stagnant water.

Smynthurus nigripes, sp. nov.

Black; head black, paler between eyes; basal joint of antennæ blackish, rest pale, fourth a trifle darker; abdomen black above and below; legs black, except pale claws; furcula black, except pale mucrones. Head broad, large; antennæ with basal joint short, second twice as long, third scarcely one-fourth longer than second, slightly curved, and above at curve is a stiff bristle, fourth longer than rest of antennæ, slightly curved, with about 16 or 18 annulations; abdomen broader behind than in front, sub-truncate behind, anal tubercle large; furcula moderate, dentes three and one-half times as long as broad at base, below with some hairs, mucrones moderate, fine, slender distinctly serrate below; abdomen with many long pale hairs above. Length. 1.4 mm.

In woods on rotten logs, Sea Cliff, N. Y. Known by its uniform black color.

Smynthurus sylvestris, sp. nov.

Pale; head often darker on sides, and some dark spots in front, and many between eyes, and a row along occipital margin; antennæ pale, basal joint darker; legs pale, a dark band or mark on femora and three on tibiæ, one at base, one at middle, and one before tip; abdomen thickly mottled with black, brown, and purplish markings above, becoming most dense on the lower sides, a rather large black submedian spot each side behind middle; anal tubercle above with a median black spot; beneath abdomen is pale, with a few purplish blotches each side; furcula pale, dentes darker on base. Antennæ of moderate length, basal joint a little longer than broad, second twice as long as first, third once and one-half as long as second, fourth nearly as long as the rest together, with about 18 annulations; abdomen rather long, hairy above;

furcula of moderate length, dentes nearly four times as long as broad at base, with hairs beneath, mucrones about one-third the length of dentes, serrate below, tip down-curved. Length, 2 mm.

Among dead leaves in woods, Sea Cliff, N. Y. Known by banded legs, and mottled abdomen.

Smynthurus argenteornatus, sp. nov.

Pale; head with various pale brown markings, but obscure, more prominent between antennæ, and one larger near each eye: antennæ pale, dark on apical joint; legs pale, the tibiæ sometimes brownish; abdomen pale on base, darker on apical half, often the distinction very marked; the basal part, however, has brown marks and lines; on each side are about six silvery white spots or patches, venter pale, ana-tubercle when fully marked shows a pale round spot each side above; furcula pale, dentes rather darker. Antennæ of moderate length, basal joint a little longer than wide, second not twice as long, third nearly twice the length of second, fourth longer than others together, with about 18 annulations; abdomen of usual shape, not elongate, broader behind, hairy above; furcula moderate, dentes fully three times as long as wide at base, a few hairs below, mucrones about one-third the length of the dentes, slender, serrate below, and down-curved at tip. Length, 1.8 mm.

In woods, on ground, Sea Cliff, N. Y. Differs from *S. sylvestris* in pale color, unbanded legs, silvery spots on sides, and longer third joint of antennæ. There is a form which I take to be but a variety of this species, variety *albescens*. Pale whitish or greenish, eyes black, antennæ dark except basal joint, silvery spots on sides show in fresh specimens. Does not differ in structure from the type, except possibly a slightly shorter third joint of antennæ. It occurs only in a moss (*Polytrichum commune*).

Smynthurus dorsalis, sp. nov.

Head pale, faintly lined with reddish, sometimes showing a more distinct reddish band connecting bases of antennæ, eyes black; antennæ pale on basal joints, last joint dark; abdomen pale yellowish, but with many fine blackish marks on sides becoming closer behind and extending farther on dorsum till they meet somewhat before tip, where it is black; this leaves a pale broad dorsal mark, [rather sharply outlined behind, but not in front, anal tubercle dark; legs and furcula pale, venter pale, dark marks on basal part. Head rather large; antennæ arise directly in front of eyes, first joint nearly one-half as long as second; third is one-half longer than second, fourth longer than second and third together, at first simple, then with 18 annulations; legs short; abdomen nearly twice as long as broad, with scattered hairs above, more numerous behind and on anal tubercle; furcula short, manubrium short, dentes nearly twice as long, tapering, with a few hairs below, mucrones short, about one-third the length of dentes, covered at tip, serrate below. Length, 1.5 mm.

In woods, Sea Cliff, N. Y. Recognized by pale dorsal area.

Smynthurus fraternus, sp. nov.

Head pale, dark on face, but shading into pale above; antennæ pale; legs dark brown, rather purplish; abdomen dark brown, slightly purplish, venter darker on base, light on apical half, furcula dark. Very similar to *S. nigripes* in general appearance and structure, but it is larger, the abdomen longer and the sides more parallel, the color more purplish, the head pale above and pale on apical half of venter. The structural characters are practically the same as *S. nigripes*; but the species, side by side, appear to be different.

Sea Cliff, N. Y.

Smynthurus clavatus Banks.

Easily known by the clavate hairs on dorsum; it occurs on rotten logs.

Smynthurus macgillivrayi Banks.

This species was swept from grass on a high hill (Harbor Hill) at Roslyn, Long Island. The pair of small horns easily separate it from all other species.

Smynthurus hortensis Fitch.

This is abundant on garden vegetables, and also in lawns.

Smynthurus arvalis Fitch.

Common in fields, and also on garden vegetables.

Smynthurus elegans Fitch.

Rare, on sandy ground. A form has dark stripes connected, and a spot behind on each side separate from the stripes.

Genus **Dicyrtoma** Boul.

Abdomen maculate. **guttata**.
Abdomen not maculate **unicolor**.

Dicyrtoma guttata Say.

Papirius marmoratus Pack.

A few specimens of this handsome species which I believe is the same as Say's.

Dicyrtoma unicolor Harvey.

Papirius unicolor Harvey.

Papirius purpurascens MacGill.

Rather common in woods among dead leaves; it appears to agree exactly with Harvey's figure and description. Two specimens smaller and darker are scarcely more than a variety.